

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of: :
Pierluigi Malfatti and Claudio Torghele : **Group Art Unit**
: Not Yet Assigned
: **International Appl. No.:** PCT/EP01/04656 :
: **Intl. Filing Date:** 25 April 2001 :
: **U.S. Serial No.:** 10/030,287 : **Examiner:**
: Not Yet Assigned
: **U.S. Filing Date:** January 7, 2002 :
: **For:** Dough Mixer with Metering Device

SECOND PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Box: PCT
2900 Crystal Drive
Arlington, VA 22202

Dear Sir:

This second preliminary amendment is being filed in the above-referenced national stage U.S. patent application before substantive review of the application. Please enter the amendments included herein prior to any substantive review by an examiner.

The Commissioner is authorized to charge all fees associated with this response, or credit any refund, to Deposit Account No. 50-1089.

Please amend the application, without prejudice, as follows:

In the Claims:

Please cancel claim 1.

Please add claims 13 through 39 as follows:

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13. A dough mixer for the production of dough, comprising:

- a. a closed housing with horizontal housing axis, the housing having two inner, essentially circular, juxtaposed, coaxial and separated surfaces between which two casing surface sections extend which run in an arc along the same casing line and change in the upper and lower region into a flat surface section, the flat surface sections each at least partially formed by the surface of a sliding blade in its closed position; and
- b. a kneading element operating with a rotational axis coaxial or parallel to the housing axis.

14. The dough mixer of claim 13, further comprising a cross piece to the casing surface sections and to the level surface sections, located along a perimeter of each circular surface, the cross piece having a large rounding-off radius.

15. The dough mixer of claim 13, wherein one circular surface, across from a circular surface from which a drive shaft extends for the kneading element, has a slight conical or domed form projecting into the housing, coaxially to the rotational axis of the kneading element.

16. The dough mixer of claim 13, wherein one circular surface, across from a circular surface from which a drive shaft extends for the kneading element, has a distinctive conical, nose cone-shaped, or cylindrical form with hemispherical end that is coaxial or parallel to the rotational axis of the kneading element.

17. The dough mixer of claim 13, wherein one circular surface, across from a circular surface from which a drive shaft extends for the kneading element, has one or more holes for supply of liquid ingredients into the housing, the one or more holes located in a central region of the circular surface, within a circular track defined by ends of the kneading element.

18. The dough mixer of claim 13, wherein the housing of the dough mixer and the kneading element are occasionally subjected to moving hot air introduced through a hole or nozzle and which exits through a discharge opening in the housing, the hot air generated by a drive motor of the dough mixer or from a pneumatic system and heated prior to entry, the hot air sterilizing the housing and the kneading element, loosening any bits of dough or leftover ingredients and transporting same by means of the exiting stream of air.

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19. The dough mixer of claim 13, wherein the kneading element includes:
 - a. an arm extending radially from an end of a drive shaft of the kneading element;
 - b. two fixed pins, one pin being attached to each free end of the arm, the pins having a longitudinal axis parallel to the rotational axis of the kneading element; and
 - c. two cylindrical sleeves, one sleeve attached to each fixed pin by an axially recessed hole allowing the sleeve to freely turn relative to the fixed pin, wherein terminal regions of each sleeve are rounded-off, round-ended, or nose cone-shaped.
20. The dough mixer of claim 19, wherein the arm is fastened off-center to the drive shaft such that the two fixed pins turn with varying radius about the rotational axis of the kneading element.
21. The dough mixer of claim 13, wherein the kneading element includes:
 - a. a plurality of arms, each extending radially along a drive shaft of the kneading element at some distance from an end of the drive shaft;
 - b. a fixed pin attached to each free end of each of the plurality of arms, each fixed pin having a longitudinal axis parallel to, and not equidistant from, the rotational axis of the kneading element; and
 - c. a cylindrical, freely turning sleeve attached to each fixed pin.
22. The dough mixer of claim 21, wherein an inner housing wall, corresponding to the one circular surface across from the circular surface from which the drive shaft extends for the kneading element, is replaceable with a housing wall that changes the distance between the two circular surfaces, and depending on this change in distance, the sleeves are replaced by sleeves with appropriate longitudinal extension.
23. The dough mixture of claim 13, further comprising a metering device having a cylindrical container with vertical longitudinal axis, the cylindrical container including:
 - a. a dust storage area in an upper region;
 - b. a metering mechanism in a lower region;
 - c. at least one dust stirring element operating in the upper region;
 - d. at least one metering stirring element operating in the lower region;
 - e. a distribution cone in the lower region;

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f. a metering disk with a plurality of metering holes equally spaced from one another, and equally spaced from a rotational axis of the metering disk, the metering holes being located along a rim of the metering disk; and

g. a shaft that rotates coaxially with the vertical longitudinal axis of the cylindrical container to activate the dust stirring elements, the metering stirring elements, the distribution cone, and the metering disk to provide pre-determined portions of dust to the dough mixer.

24. The dough mixer with metering device of claim 23, wherein the cylindrical container further comprises an annular, funnel-like partition, through a central opening of which an upper part of the distribution cone extends to form an annular duct for the dust to enter the metering region.

25. The dough mixer with metering device of claim 24, wherein at least one dust stirring element operates, extending radially from the distribution cone near an upper surface of the partition.

26. The dough mixer with metering device of claim 23, wherein the metering disk is positioned between a fixed, level bottom plate of the cylindrical container and an annular, fixed sieve, and the bottom plate includes an outflow opening within the track of the metering holes of the rotating metering disk.

27. The dough mixer with metering device of claim 26, wherein the sieve includes ducts through which the dust passes and wherein at least one metering stirring element, extending radially from the distribution cone, passes close to the sieve during rotation of the cone.

28. The dough mixer with metering device of claim 13, wherein the dough mixer and the metering device can function independently of each other, and the dough mixer can function with a known metering device or the metering device can function with a known kneading device.

29. A method for producing dough, comprising the steps of:

- a. charging a mixing region with flour-like or dust-like ingredients by free fall;
- b. homogenizing and aerating the flour-like or dust-like ingredients by rotating a kneading element at a relatively high speed;
- c. introducing liquid ingredients to the flour-like or dust-like ingredients;

d. preparing a dough mixture by rotating the kneading element at a lower speed to form and roll together little dough clumps;

e. preparing the dough by rotating the kneading element at an even lower speed to roll out and roll thin the dough;

f. forming a single, compact, balled together dough mass by rotating the kneading element at a lowest speed; and

g. discharging the single, balled together dough mass by centrifugal force via the rotating kneading element and by gravity.

30. The method of claim 29, wherein charging the mixing region by free fall occurs through a charging opening in the mixing region equipped with a sliding blade.

31. The method of claim 29, wherein the relatively high speed is between about 2,500 and 3,000 rpm.

32. The method of claim 29, wherein the lower speed is between about 950 and 1,400 rpm.

33. The method of claim 29, wherein the little dough clumps are formed and rolled together by repeated action of rotating sleeves of the kneading element.

34. The method of claim 29, wherein the even lower speed is between about 850 and 920 rpm.

35. The method of claim 29, wherein the dough is rolled out and rolled thin by freely turning sleeves against a lower level surface of the mixing region.

36. The method of claim 29, wherein the lowest speed is between about 700 and 820 rpm.

37. The method of claim 29, wherein discharging the single, balled together dough mass occurs through a discharge opening in the in the mixing region equipped with a sliding blade.

38. The method of claim 29, wherein the rotational direction of the kneading element changes one or more times during various method steps.

39. A dough mixer for the production of dough, comprising:

- a. means for charging a mixing region with flour-like or dust-like ingredients;
- b. means for homogenizing and aerating the flour-like or dust-like ingredients;
- c. means for introducing liquid ingredients to the flour-like or dust-like ingredients;

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- d. means for preparing the dough; and
- e. means for discharging the dough from the mixing region.

REMARKS

Please cancel claim 1, as indicated above. Please note that claims 2-12 were canceled by the Preliminary Amendment filed with this U.S. National Stage Patent Application on January 7, 2002. Please add claims 13-39, as provided above. No new matter has been introduced by this amendment.

Respectfully submitted,

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In re patent application of: :
: Group Art Unit
Pierluigi Malfatti and Claudio Torghele : Not Yet Assigned
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PRELIMINARY AMENDMENT

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Dear Sir:

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Should it be deemed that additional fees are due, the Commissioner is authorized to charge any fee, or credit any refund, associated with this response to Deposit Account No. 50-1089.

Please amend the application, without prejudice, as follows:

In the Claims:

Please cancel claims 2-12.

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REMARKS

Please cancel claims 2-12 as indicated above. The amendments were made to reduce the number of multiple dependent claims. No new matter has been introduced by this amendment.

Respectfully submitted,

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